

Claims:

1 1. A fresh water generation system that generates fresh water from a liquid reservoir,
2 comprising:

3 a cell that receives an input liquid and disassociates the input liquid into hydrogen gas and
4 oxygen gas, the cell having a first electrode that generates the hydrogen gas, a second electrode
5 that generates the oxygen gas and an output that returns the excess input liquid to a reservoir and
6 cleans contaminants out of the cell; and

7 a second cell that receives the hydrogen and oxygen gases from the first cell, the second
8 cell comprising an anode, a cathode and a catalyst separating the anode and cathode, wherein the
9 hydrogen gas is provided to the anode and the oxygen gas is provided to the cathode and the
10 hydrogen gas is separated into electrons and protons in the presence of the catalyst, the protons
11 passing through the catalyst to the oxygen gas and recombining with the oxygen gas to produce
12 potable water.

13 2. The system of Claim 1 further comprising a power supply that supplies power to
14 the first cell and receives power from the second cell.

15 3. The system of Claim 2, wherein the power supply further comprises an energy
16 generation system that generates energy.

17 4. The system of Claim 3, wherein the energy generation system comprises a solar
18 energy system.

19 5. The system of Claim 1, wherein the catalyst further comprises a carbon fiber
20 platinum plate.

21 6. The system of Claim 1, wherein the input liquid further comprises a non-potable
22 water source.

23 7. The system of Claim 6, wherein the non-potable water source further comprises
24 one of seawater and brackish water.

25 8. The system of Claim 1, wherein the output flushes the dissolved material in the
26 input liquid that separates during the disassociation process back to the reservoir.

27 9. A fresh water generation method for generating fresh water from a liquid
28 reservoir, comprising:

disassociating the input liquid into hydrogen gas and oxygen gas using a cell having a first electrode that generates the hydrogen gas, a second electrode that generates the oxygen gas; flushing contaminants out of the cell and returning the excess input liquid to the reservoir; generating energy during a recombination of the generated hydrogen and oxygen gases; and generating potable water as a by-product of the energy generation.

10. The method of Claim 9 further comprising supplying power via a power supply to the disassociation process and receiving power from recombination process.

11. The method of Claim 10 further comprising generating energy in addition to the energy generated by the recombination process.

12. The method of Claim 11, wherein energy generation further comprises generating energy from solar radiation.

13. A method for installing and operating a fresh water generation system, the method comprising:

placing a fresh water generation system into a location, the fresh water generation system comprising a cell that receives an input liquid from an input port and disassociates the input liquid into hydrogen gas and oxygen gas, the cell having a first electrode that generates the hydrogen gas, a second electrode that generates the oxygen gas and an output that returns the excess input liquid to a reservoir and cleans contaminants out of the cell, and a second cell that receives the hydrogen and oxygen gases from the first cell, the second cell comprising an anode, a cathode and a catalyst separating the anode and cathode, wherein the hydrogen gas is provided to the anode and the oxygen gas is provided to the cathode and the hydrogen gas is separated into electrons and protons in the presence of the catalyst, the protons passing through the catalyst to the oxygen gas and recombining with the oxygen gas to produce potable water; attaching an input liquid stream to the input port of the fresh water generation system; and operating the fresh water generation system with minimal maintenance since the fresh water generation system has few moving parts.

57 14. The method of Claim 13 further comprising housing the first cell and a power
58 source in a first unit, housing the second cell in a second unit and housing a water storage unit in
59 a third unit wherein the first, second and third units are connected to each other.

60 15. The method of Claim 14 further comprising housing the first, second and third
61 units in a container.

62 16. The method of Claim 14 further comprising housing the first unit in a first
63 container, the second unit in a second container and the third unit in a third container.